Caltrans Storm Water Management Program

Improved Data Quality Through the Use of a Standard Laboratory Deliverable and Data Assessment Software

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Caltrans Storm Water Management Program

Introduction

Caltrans Storm Water Management Program requires a measure of quality assessment of environmental chemistry analyses on storm waters collected throughout the state.

Two issues

- **Problems with information delivered in electronic data format (EDD)**
- **Cost and effort involved with manual data review**

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Data Quality System

- Laboratory EDD format
- EDD integrity check
- Ability to review lab results relative to project specific criteria
- Automated data review of all environmental analytical methods
- Post assessment standard delivery format

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Product

- Built on a Microsoft ACCESS platform
- EDD format specification based on Caltrans Data-Reporting Protocols and additional fields required for data review
- Three software components
  - EDD Integrity Check Module
  - Project specific library
  - EDD Automated Data Review Module

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EDD Integrity Check

A laboratory process

- Checks for compliance with Caltrans data reporting protocols
- Checks for information correctly reported for automated data review
- Checks technical consistency between related constituents

Laboratory EDDs error checked and fixed before delivery to client

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EDD Integrity Check

- Required fields
- Standard Values
- Data format
- Logical date/time values
- Duplicate records
- Missing QC information
- Correct QC/sample batching
- Technical consistency

Report describes and locates each error (if applicable)

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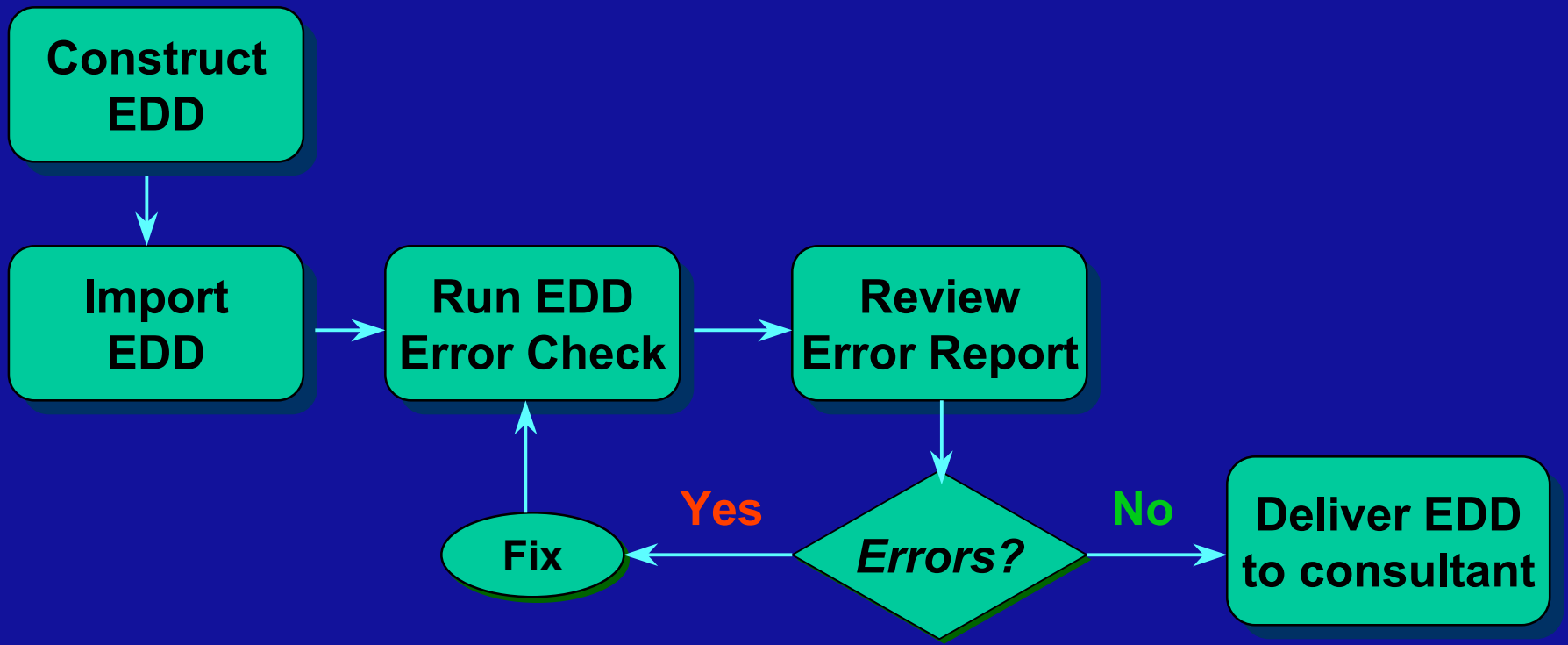
EDD Integrity Check

Lab Process Flow



Project Specific Library

Provides flexibility to review lab data relative to project requirements

- Reporting Limits
- Units
- Accuracy and precision limits
- Rejection criteria
- Blank contamination rules
- Holding Times

Project water quality objectives serve as template for library

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Automated Data Review

A consultant process

- Quality control results assessed relative to review criteria in a project specific library
- Data review qualifiers applied to each constituent result when associated quality control results fail criteria specified in project library
- Compares constituent results against historical ranges

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Automated Data Review

Data review elements

- Holding times
- Reporting limits
- Method blank contamination
- Laboratory control samples
- Matrix spike/spike duplicates
- Laboratory duplicates
- Surrogates (organic methods)
- Field QC
  - Field blank contamination
  - Field duplicates

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Automated Data Review

Post review assessment

- Validation reports summarize data review findings for each sample and constituent reported on that sample
- Quality control outlier reports summarize quality control problems and list all associated samples

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Automated Data Review

Post assessment EDD submittal

- Add sample description information not included in EDD submitted by lab
- Export reviewed EDD for delivery to Caltrans in format specified by Caltrans
- Export utility also offers custom format option

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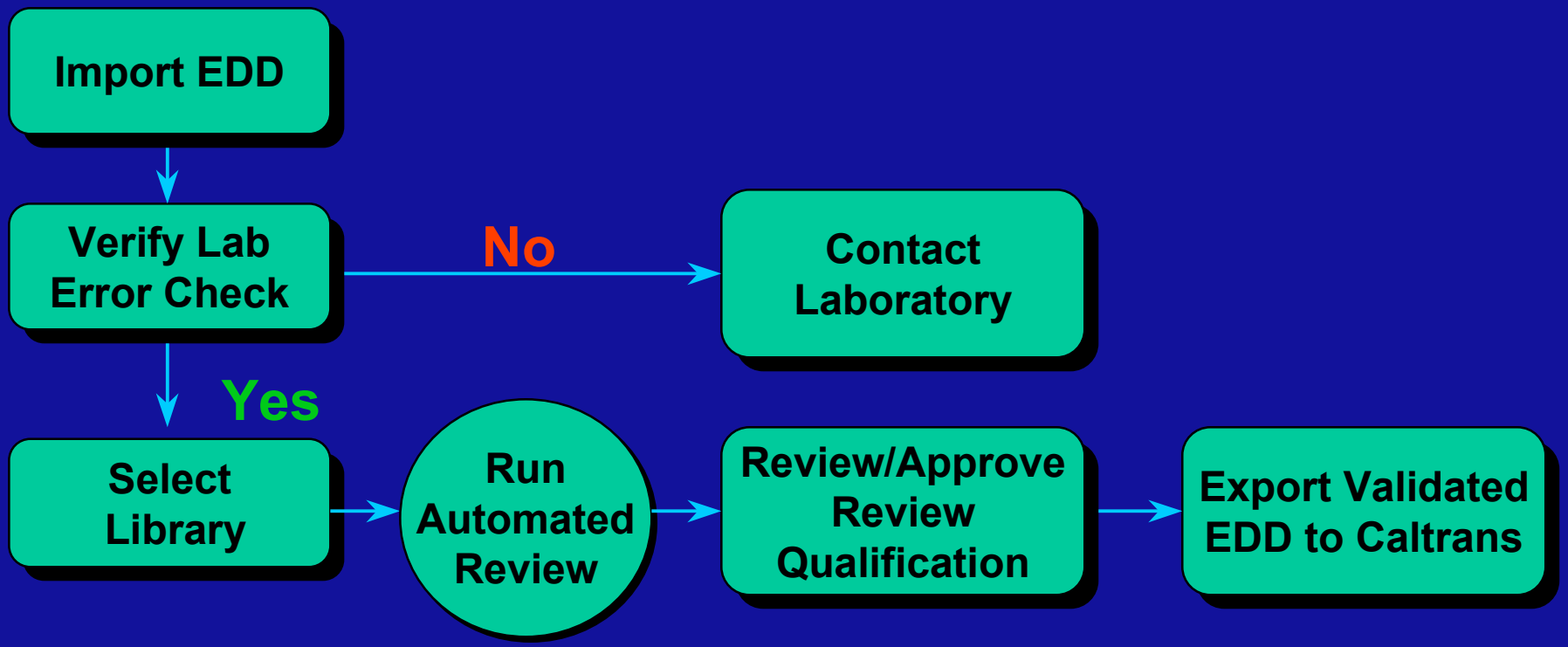
Automated Data Review

Consultant Process Flow



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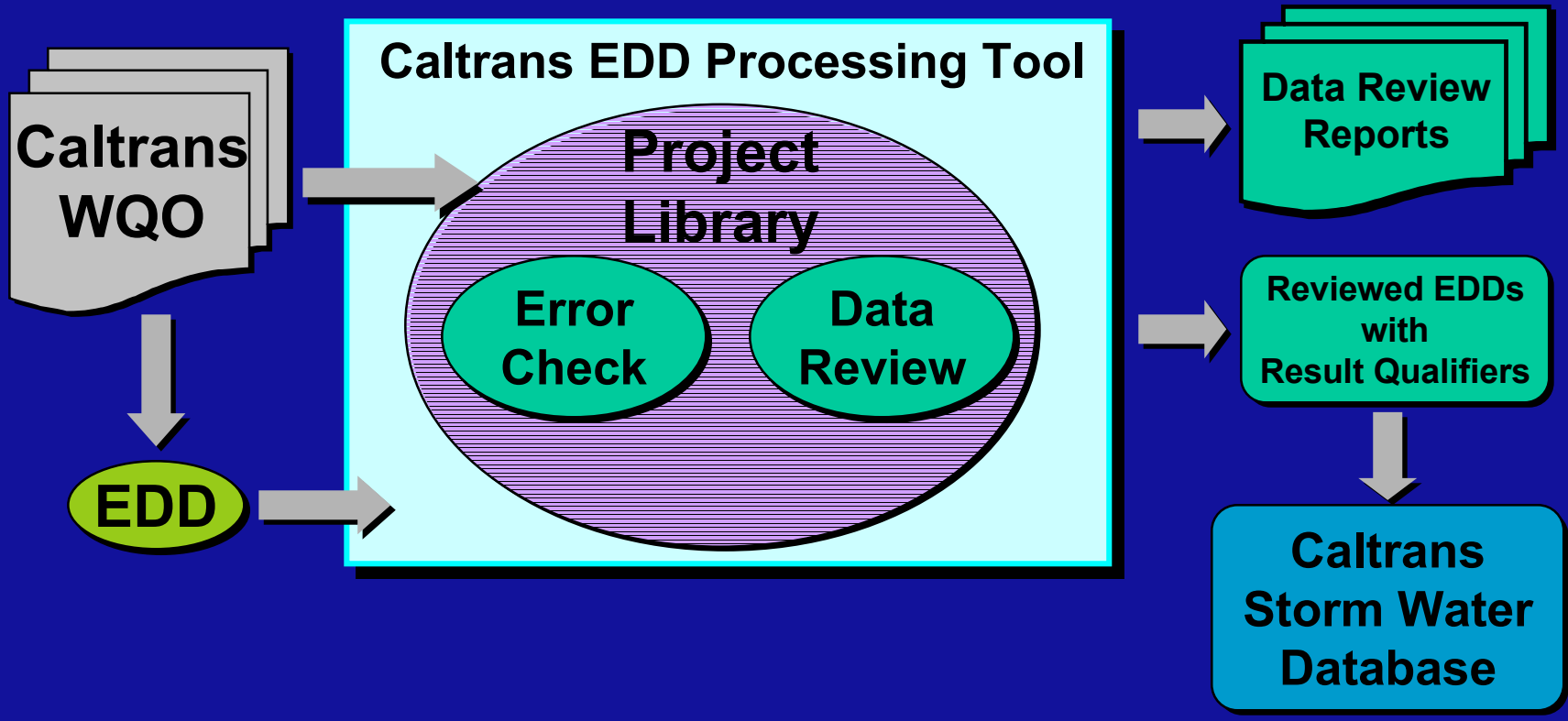
Overview



Summary

- EDD data format consistent between data collectors
- Assures quality lab EDDs
- 100% data review for all laboratory analytical results
- Reduced labor time and cost

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